

# We are What we Eat: Consumer Perception-Based Food Safety Compliance of Food lane Night Market in San Jose, Nueva Ecija, Philippines

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## ABSTRACT

The study aimed to assess the food safety compliance of Food lane Night Market in San Jose City, Nueva Ecija, Philippines. It specifically examined the demographic profile of consumers based on sex, age, occupation, and number of visits. Additionally, the study investigated significant differences and relationships in the assessment of food safety compliance when grouped by demographic profile. A quantitative descriptive research design was used, involving 273 respondents aged 18 and above who had dined at least once at the food lane Night Market. Data was collected using a 4-point Likert scale and printed survey questionnaires distributed directly to consumers. Frequency and percentage distribution described the respondents' demographic profiles. ANOVA and T-tests examined significant differences between consumers' socio-demographic profiles and their assessment of food safety compliance, while Pearson R Correlation tested for a significant relationship between consumers' demographic profiles (age and number of visits) and their assessment of food safety compliance. The study found that the food lane Night Market complies with the WHO's Five Keys to Safer Food: keep clean, separate raw and cooked food, cook food thoroughly, keep food at safe temperatures, and using safe water and raw materials. Most respondents were female, primarily students aged 20 and below, who had visited the market more than five times. No significant difference was found between consumers' socio-demographic profiles (sex and occupation) and their assessment of food safety compliance. Additionally, there was no significant relationship between consumers' socio-demographic profiles (age and number of visits) and their assessment of food safety compliance, except for a significant relationship between the number of visits and the assessment of cooking food thoroughly. Based on these findings, an action plan to improve food safety compliance at food lane Night Market was proposed.

**Keywords:** Food Safety Compliance, Five Keys to Safer Food, Street Food, World Health Organization, Food Handlers

## INTRODUCTION

In the Philippines, particularly in the province of Nueva Ecija, food lane night markets are continually emerging and introducing fresh ideas and attitudes. The Food lane Night Market in San Jose City, Nueva Ecija, is a popular destination for food enthusiasts. Located along Maharlika Highway, this night market was established in 2016 during the tenure of Mayor Mario (Kokoy) O. Salvador. Originally a parking lot and vegetable bargain area, the site transformed into a bustling night market due to the renovation of the public market and the rising demand for street foods. Vendors began selling a variety of foods, leading to its current recognition as the Food lane Night Market. Its accessibility and affordability attract visitors from different barangays and cities who come to enjoy street foods. Most foods sold at food lane night markets are finger foods and fast foods, typically cheaper than restaurant meals. Street food is a significant commodity contributing to economic growth by creating jobs (Alimi, 2016) and changing public food consumption habits due to its accessibility and affordability (Cortese, 2015). In tourism, food lane night markets are vital as they

showcase the culinary merits of various locales, offering visitors a unique gourmet experience (Tonelada et al., 2018).

To maximize their significance and ensure the health and safety of the public and tourists, food lane night markets must prioritize food safety and cleanliness. Implementing robust food safety and sanitation practices can help restaurants exceed patrons' expectations and meet their needs. Food handlers and food must work together to ensure food safety, which cannot be isolated from either. It guarantees that food, when prepared and consumed as intended, will not have any negative health consequences on humans (Codex Alimentarius 2020). Ethically, financially, and legally, stakeholders in food safety have both rights and obligations. Food chain stakeholders, including government agencies, the food industry, and consumers, must promote crucial cooperation to maintain public health through the development and maintenance of the food safety and sanitation system (Food and Agriculture Organization, 2008).

Despite local and international procedures and regulations for food safety, foodborne illnesses remain prevalent. The potential and severity of unintended consequences like food poisoning are real as we innovate in the types of foods, the way they are served, and their intended uses. Even before the global coronavirus epidemic, an estimated 600 million people annually became ill from eating tainted food, and 420,000 people died globally. Several studies have identified several challenges faced by street food vendors, including a lack of education (Habib, 2016), a lack of awareness of food safety, and a lack of a positive outlook (Palapar et al., 2020).

The variables used in this study were based on guidelines developed by the World Health Organization (2006). The WHO creates guidelines for illness prevention, health services, and medication, operates research and education initiatives, and publishes reports and studies. One of the main objectives is to improve access to healthcare for those in developing nations who do not receive quality care. According to the WHO (2006), food workers need to be aware of their obligations regarding food safety standards. The five keys to safer food, as introduced by the WHO, include: 1) Keep clean; 2) Separate raw from cooked food; 3) Cook food thoroughly; 4) Keep food at safe temperatures; and 5) Use safe water and raw materials.

The study aimed to evaluate the food safety compliance of the Food lane Night Market in San Jose City, Nueva Ecija, Philippines. It focused on examining the demographic characteristics of consumers, including their sex, age, occupation, and frequency of visits. Furthermore, the study explored whether there were significant differences and relationships in consumers' assessments of food safety compliance when these assessments were analyzed according to different demographic groups. By doing so, the study sought to understand how various consumer demographics influence perceptions and evaluations of food safety practices at the night market.

### **Five Keys to Safer Food**

**Keep Clean:** The study conducted by Benitez et al. (2021) indicated that respondents adhered to all hygienic practices, food preparation and processing, food contamination prevention, and waste management, demonstrating that street food vendors in Dipolog City observe proper food safety practices. It is recommended that local government officers assigned to this sector monitor these vendors to further strengthen food safety practices, as they serve various types of consumers. Data revealed by Hasan et al. (2020) on the environmental hygiene of surveyed vending sites showed that less than 50% of the sites had both wash basins and soap available, and only 50.2% and 42.6% of the sites had waste bins and refuse areas, respectively. The adherence to safe food handling practices was reflected in adequate protection of food from flies and dust (40.8%), dishing out food with a spoon or ladle (53%), and covering food (57.4%). The World Health Organization (2006) stated that, although most microorganisms do not cause disease, harmful bacteria are commonly found in soil, water, animals, and humans. Even minimal contact can transfer these microorganisms to food, resulting in foodborne illnesses. These pathogens are carried on hands, wiping cloths, and utensils, especially cutting boards. The WHO strongly emphasized the importance of cleanliness, stating that food handlers should always maintain cleanliness as one of the five keys to safer food. Proper personal cleanliness, particularly hand washing, can significantly reduce the risk of cross-contamination. Oludare et al. (2016) found that most respondents (80%) understood that using personal protective equipment such as aprons, hairnets, and

gloves can reduce the risk of contamination while preparing food. According to the study by Odeyemi (2012), respondents believed that food handlers kept their nails short, with 91 (59%) refraining from picking their noses. The levels of adherence to hygienic and sanitary practices among food vendors included always washing hands with soap after using the toilet (33.2%) and before preparing food (63%), keeping fingernails clean (98.5%), protecting hair (33.6%), and using aprons (29%). The results indicate poor environmental sanitation and waste handling practices, but moderate adherence to food handling practices, safety measures, and hygiene. It is suggested that food safety and hygiene training should be a prerequisite for starting a food-vending venture and should be complemented with regular monitoring.

**Separate Raw and Cooked Food:** The Centers for Disease Control and Prevention (CDC) (2017) states that using the same tools, such as cutting boards and knives, to prepare raw and cooked food without washing them in between can lead to contamination during food preparation. Hossein et al. (2020) found that 48% of the vendors in their study properly washed and sanitized their knives after chopping raw food. Additionally, food hub vendors were highly compliant in dedicating equipment and utensils, such as knives and chopping boards, for handling raw foods. However, according to the CDC (2014), the majority of the vendors did not change gloves between handling raw and ready-to-eat foods. The study by Raji et al. (2021) revealed that only 15% of the food handlers always separated raw and cooked food during storage. This is a significant concern as the contact between uncooked foods, such as raw meat, and ready-to-eat foods, like salad, can be a source of foodborne illness. Another study by Chambers et al. (2015) found that 76.3% and 69.1% of consumers, respectively, reported putting raw poultry and raw ground poultry in separate plastic bags before adding them to their grocery bags or making an effort to prevent them from touching other foods in their cart. The majority of consumers keep raw poultry and raw ground poultry separate from other foods. Furthermore, 70.3% and 61.8% of customers, respectively, stated that their raw ground poultry or raw poultry was separated from other foods in their grocery bags at the checkout.

**Cook Food Thoroughly:** Some studies contradict the previously mentioned results regarding consumers' perceptions of the food safety compliance of vendors. Rheinlander's (2008) study showed that 83% of consumers believed that street vendors typically cook large portions of food in the morning and store and sell it throughout the day without reheating it. Rheinlander (2008) also revealed that consumers observed that chicken and meat stews are often served cold or tepid.

**Keep food at safe temperatures:** The study by Hasan et al. (2020) revealed that only 28.3% of vendors keep food in cold storage and only 35.1% serve their food hot or reheat it before sale, indicating that few adhere to these practices. Additionally, Rheinlander (2008) observed that none of the vendors had access to cooled storage facilities for leftovers or uncooked meat and vegetables. Furthermore, Letuka et al. (2021) mentioned that consumers perceive street food vendors as not keeping foods in an icebox or refrigerator. Consumers play a crucial role in the assessment and improvement of food safety compliance. Kosa et al. (2015) emphasized the importance of educational messages that motivate consumers by highlighting the benefits of following recommended policies, such as using a food thermometer to overcome barriers. Moreover, Weyumathe (2022) found that the student cafeteria at Kotebe Metropolitan University faces several challenges, including a lack of thermometers to measure temperature, written standard operating procedures for food safety and handling, a method for managing liquid waste, and a location to dispose of food leftovers.

**Use safe water and raw materials:** Numerous studies have shown that the impact of sex on food safety compliance among food handlers varies. The consumption of street food has become a significant public health concern due to widespread food-borne illnesses. Argente et al. (2020) found that many street food vending sites lacked running water and handwashing facilities, despite the presence of trash bins. Vendors generally exhibited moderate food safety knowledge and positive attitudes toward food safety, but these did not consistently translate into safe practices. Enhancing vendors' knowledge and skills in purchasing, preparing, handling, and selling street food is crucial for protecting consumer health. Despite existing laws, stakeholders face ongoing challenges in achieving food safety compliance. Furthermore, Letuka et al. (2021) observed that vendors often operated under unhygienic conditions with limited access to clean water and handwashing facilities, posing risks to consumer health. Inadequate food preparation facilities and a lack of food safety training were identified as primary contributors to poor hygiene practices among vendors. To improve the

safety of street food in Maseru, local government entities should provide infrastructural support, including proper stalls, sewage systems, toilets with handwashing facilities, waste disposal bins, and reliable access to clean water near vending areas. Compulsory food safety training and regular inspections are also recommended to ensure vendors apply their knowledge effectively. Street food handlers should obtain food handler certificates, mandated in Lesotho, and be educated on the proper use of protective clothing such as gloves. Manickavasagam (2018) highlighted additional challenges faced by street food vendors, including limited access to safe water, suitable vending zones, electricity, and storage facilities.

## **METHODS**

This study employed a quantitative descriptive design to gather detailed descriptions and data on food safety compliance at Food lane Night Market in San Jose City, Nueva Ecija. Questionnaires were distributed to consumers aged 18 and above who had dined at least once at the market. This method, commonly used in quantitative research, allowed the collection of precise information from a large respondent base. The study assessed consumer experiences using dimensions aligned with the Five Keys to Safer Food framework recommended by the World Health Organization (2006). The questionnaire was validated to ensure it met the study's objectives and was reliable, as indicated by a test-retest method with 15 separate consumers and a Cronbach's alpha of 0.979, demonstrating excellent internal consistency. Permission for the study was obtained from the City Health Office (CHO), and the survey questionnaires were personally administered by the researchers. Data analysis included ranking, weighted mean, frequency and percentage distributions, ANOVA, and T-test methods to interpret the results.

## **RESULTS AND DISCUSSION**

This chapter presents the essential data regarding the Food Safety Compliance in Foodlane Night Market in San Jose City, Nueva Ecija. It also includes the presentation, analysis and interpretation of data gathered by the researchers through the use of the research instruments.

### **Socio-demographic Profile of the Respondents**

This section presents the results of the respondents' socio-demographic profile according to their age, sex, type of consumers (based on occupation) and number of visits.

Table 1: Frequency and Percentage Distribution of he Socio Demographic Profile

<b>Profile Variables</b>	<b>Frequency</b>	<b>Percentage</b>
<b>Age (year)</b>		
20 and below	113	41.4%
21-30	98	35.9%
31-40	34	12.5%
41-50	22	8.1%
51-60	55	1.8%
60 and above	1	0.4%
<b>Sex</b>		

Male	109	60.1%
Female	164	39.9%
<b>Type of Consumer</b>		
Student	153	56.04%
Self-Employed	52	19.0%
Employed	64	23.4%
Retired	4	1.5%
<b>Number of Visits</b>		
1 to 2 times	70	25.6%
3 to 5 times	61	22.3%
More than 5 times	142	52.01%

The data presented indicates that the majority of consumers in Food lane Night Market were 20 years old and below accounting for 41.4 percent with a frequency of 113, While 60 and above had the lowest percentage of 0.4 percent and frequency of 1. Twenty (20) and below are the most common consumers of the foodlane night market because they are usually the ones who enjoy eating street food more than the older ones. Based on the result of Nelvin et al. (2018) the young consumer population in the three cities where the survey was conducted is reflected in these demographic traits. This shows that a higher percentage of the younger generations tend to consume more street food than older ones. On the other hand, 60 years old and above does not usually eat in food lane night market San Jose because they do not have time to eat street food and they prefer something that is more healthy and nutritious. This is further proven by the study of Seo et al. (2021) which shows that the lowest percentage of older people with 40 and above years of age tend to eat street food less frequently.

Regarding sex, there were 109 male and 164 female respondents. This indicates that the majority of consumers at the Food lane Night Market were female, comprising 60.1% of the sample, while males accounted for 39.9%. Females appear particularly inclined to patronize the Foodlane Night Market due to the enjoyable experience of purchasing street food amidst a variety of cuisines at reasonable prices. Xu Ji's study (2019) supports this finding, indicating that females are more likely to enjoy street food compared to males. Conversely, Sanlier et al. (2018) found that males tend to have higher preferences for street food than females. Additionally, Prinyawiwatkul et al. (2021) noted that men are generally more reluctant to try new foods, preferring familiar options, which may impact their willingness to explore street food options.

Moreover, the data shows that 153 respondents (56.04%) were students, 64 respondents (23.4%) were employed, and 52 respondents (19.0%) were self-employed or entrepreneurs. Only 4 respondents (1.5%) were retired. This distribution indicates that students constitute the largest group of consumers at the Foodlane Night Market. This preference among students can be attributed to the market's quick service and affordable prices, which align well with student budgets compared to other alternatives like fast food. Thatchinamoorthy et al. (2018) and Sumaiya Mamun et al. (2020) support this trend, noting that street food is particularly favored by young consumers, especially students, due to its taste, accessibility, variety, and cost-effectiveness. Sanlier et al. (2021) further elaborate that students often opt for street food due to economic factors and quick service, despite awareness of its potential health drawbacks and nutritional limitations. In contrast, retirees represented a minimal percentage of 1.5%, indicating a lower likelihood of visiting or consuming at the Foodlane Night

Market, likely preferring to dine at home. This aligns with That chinamoorthy et al. (2018), which highlighted that street food consumption is more prevalent among students than retirees.

Furthermore, the findings reveal that 142 respondents (52.01%) visited the market more than five times. Approximately 70 respondents (25.6%) visited one to two times, while 61 respondents (22.3%) visited three to five times. These results indicate that a majority of consumers at the Food lane Night Market visited more than five times, with a frequency of 142. In comparison, those who visited three to five times represented the lowest percentage at 22.3%. Sanlier et al. (2018) reported a high frequency of daily street food consumption among participants, contrasting with the findings of this study, which focuses on the frequency of visits to the Food lane Night Market.

### Consumers’ Assessment of Food Safety Compliance

This section presents the results of the consumers’ assessment on compliance to food safety in Food lane Night Market in San Jose City, Nueva Ecija in terms of 5 keys to safer food manual of World Health Organization; (1) Keep Clean, (2) Separate Raw and Cooked Food, (3) Cook Food Thoroughly, (4) Keep Food at Safe Temperature, and (5) Use of Safe Water and Raw Materials.

**Table 2:** Consumers’ assessment on the food safety compliance (keep clean)

Indicators	WM	VI	QD	Rank
Washing hands before handling food, often during food preparation and after food preparation.	3.23	A	C	4
Wearing an apron, hairnet, plastic gloves, and other personal protective equipment.	3	A	C	9
Washing hands and sanitizing all surfaces and equipment used for food preparation.	3	A	C	6
Maintaining personal cleanliness and good habits (no coughing and sneezing) during preparation and serving.	3	SA	HC	2
Ensuring that nails are clean, short and trimmed and without polish or artificial nails.	3.21	A	C	6
Maintaining good health status and free from illness, open wounds, and sores.	3	SA	HC	2
Using a clean container, packaging and other utensils in serving the customer.	3.35	SA	HC	1
Maintaining rubbish area clean and tidy.	3.31	SA	HC	2
Checking the food for possible physical contamination like hair and insects.	3.26	SA	HC	3
Ensuring that the food is not touched after touching money or at least hand sanitizer is used before handling food.	3.13	A	C	8
Keeping food and display areas free from insects, pests and other animals.	3.22	A	C	5
In general, the surroundings of the food stalls are clean.	3.19	A	C	7
Total Weighted Mean	3.22	A	C	

### Legend

Verbal Interpretation (VI): 3.25-4.00 = Strongly Agree (SA),

2.50-3.24 = Agree (A), 1.75-2.49= Disagree (D),

1.00-1.74= Strongly Disagree (SA)

Qualitative Description (QD): 3.25-4.00 = Highly Compliant (HC),

2.50-3.24 = Compliant (C), 1.75-2.49= Not Compliant (NC),

1.00-1.74= Not at All Compliant (NAC)

Table 2 presents the food safety compliance of the Food lane Night Market according to the World Health Organization's (WHO) Five Keys to Safer Food. The results show that in terms of “Keep Clean” Food lane Night Market gained a total weighted mean of 3.22 with verbal interpretation of agree and a qualitative description of compliant. This indicates that vendors at the Food lane Night Market prioritize cleanliness, which is observed by consumers.

The statement "Using a clean container, packaging, and utensils to serve customers" received the highest mean score of 3.35, indicating a strong agreement. This suggests that vendors at the Food lane Night Market consistently use clean containers, packaging, and utensils when serving consumers. Consumers actively notice and assess the cleanliness of utensils used by Food lane vendors, contributing positively to the market's food safety compliance. The World Health Organization (2006) notes that harmful bacteria can be found in various sources such as soil, water, animals, and humans, and can easily contaminate food through contact with hands, wiping cloths, and utensils like cutting boards. April et al. (2020) emphasized that consumers evaluate the cleanliness and organization of food establishments, as well as the practices of food handlers, food displays, packaging, and environmental controls like refrigeration, before making purchases. Similarly, Ozcelik et al. (2021) found that customers' assessments of street food cleanliness and hygiene underscored the importance of maintaining high standards of cleanliness, offering recommendations to mitigate health risks associated with consuming street food.

As revealed by the study, the statement “Wearing an apron, hairnet, plastic gloves, and other personal protective equipment” got the lowest weighted mean of 2.97 with verbal interpretation of agree. This suggests that vendors at the Food lane Night Market often do not wear personal protective equipment, a fact noticed by consumers. In contrast, Oludare et al. (2016) discovered that a majority of respondents (80%) recognized the importance of using personal protective equipment like aprons, hairnets, and gloves to reduce the risk of food contamination during preparation. The World Health Organization (WHO) underscores the critical role of cleanliness, emphasizing it as one of the five keys to safer food. Effective practices of personal hygiene, especially thorough hand washing, can greatly mitigate the risk of cross-contamination.

**Table 3:** Consumers’ Assessment On The Food Safety Compliance (Separate Raw And Cooked Food)

Indicators	WM	VI	QD	Rank
Using separate serving utensils for cooked food and other raw or ready-to-eat food.	3.26	SA	HC	2
Using clean containers, packaging, and serving utensils that are not previously used for raw and other materials.	3	SA	HC	1
Maintaining that the handling of raw and cooked food is in a manner that can prevent contamination and cross-contamination.	3	A	C	4
Dedicating equipment and utensils such as knives and chopping boards for handling raw foods.	3	A	C	3
Foodlane vendors are using a separated area for food preparation and dining.	3.19	A	C	5
Total Weighted Mean	3	A	C	

Legend

Verbal Interpretation (VI): 3.25-4.00 = Strongly Agree (SA),

2.50-3.24 = Agree (A), 1.75-2.49= Disagree (D),

1.00-1.74= Strongly Disagree (SA)

Qualitative Description (QD): 3.25-4.00 = Highly Compliant (HC),

2.50-3.24 = Compliant (C), 1.75-2.49= Not Compliant (NC),

1.00-1.74= Not at All Compliant (NAC)

Table 3 shows the food safety compliance of food lane night market on the 5 keys to safer food of the World Health Organization (WHO) in terms of “Separate Raw and Cooked Food”.

The separation of raw and cooked food in food lane night market gained a total weighted mean of 3.24 with verbal interpretation of agree and with a qualitative description of compliant. This shows that when it comes to separating raw and cooked foods it is practiced and observed by consumers. As revealed by the study, the statement “Using clean containers, packaging, and serving utensils that are not previously used for raw and other materials” got the highest weighted mean of 3.27 with verbal interpretation of strongly agree. This suggests that consumers have observed that the Food lane Night Market uses clean containers and packaging for serving, ensuring they are not previously used for raw or other materials. This practice helps prevent the spread of microorganisms to food. Rheinlander (2008) found that street food vendors commonly use separate storage for raw and cooked materials to prevent contamination and cross-contamination.

As revealed by the study, the statement “Food lane vendors are using separated area for food preparation and dining” got the lowest weighted mean of 3.19 with verbal interpretation of agree. This suggests that the Food lane Night Market utilizes distinct areas for food preparation and dining. Maintaining separate spaces for cooking and handling raw ingredients helps prevent contamination and the spread of diseases associated with poor sanitation practices. Prinyawiwatkul et al. (2021) emphasize the importance of having dedicated food preparation areas in every food establishment, as this significantly influences food handling practices and enhances the overall dining experience for consumers.

**Table 4:** Consumers’ assessment on the food safety compliance (cook food thoroughly)

Indicators	WM	VI	QD	Rank
Food is cooked and served with clear juices and free from blood traces (not pink inside).	3.24	A	C	2
Food is freshly cooked before serving to the customer.	3	A	C	3
Ensuring that the food is cooked as intended serving.	3	SA	HC	1
Reheating cooked food thoroughly upon request by the consumers.	3	A	C	

Legend

Verbal Interpretation (VI): 3.25-4.00 = Strongly Agree (SA),

2.50-3.24 = Agree (A), 1.75-2.49= Disagree (D),

1.00-1.74= Strongly Disagree (SA)

Qualitative Description (QD): 3.25-4.00 = Highly Compliant (HC),

2.50-3.24 = Compliant (C), 1.75-2.49= Not Compliant (NC),

1.00-1.74= Not at All Compliant (NAC)



Table 4 shows the food safety compliance of Food lane Night Market on 5 keys to safer food of the World Health Organization (WHO) in the concept “Cook Food Thoroughly”. The results show a total weighted mean of 3.19 with verbal interpretation of agree and qualitative description of compliant. This means that vendors are compliant in terms of cooking food thoroughly and it is observed by consumers as well.

As revealed by the study, the statement “Ensuring that the food is cooked as intended.” got the highest weighted mean of 3.25 with verbal interpretation of strongly agree. This indicates that vendors at the Food lane Night Market are proficient in ensuring that food is cooked and served correctly. Consumers have evaluated that Food lane vendors consistently prepare food as intended, ensuring its safety for consumption. Proper cooking practices are crucial; for instance, according to the USDA, poultry must be cooked to an internal temperature of 165 degrees Fahrenheit to effectively eliminate harmful bacteria. Consumers typically rely on visual cues and other sensory indicators to assess the doneness of poultry.

Conversely, the statement "Food doesn't look like it's been reheated" received the lowest weighted mean of 3.08, indicating agreement. This suggests that food vendors are unlikely to reheat food. However, this could imply that Food lane vendors may lack sufficient food safety knowledge, potentially posing health risks to consumers. According to the World Health Organization (2006), appropriate cooking can effectively eliminate nearly all harmful germs, emphasizing its critical role in food safety. Studies suggest that cooking food to a temperature of 70 degrees Celsius helps ensure its safety for consumption. Teffo et al. (2020) underscore the threat posed by inadequate food safety knowledge in food establishments, highlighting the need for comprehensive training and adherence to safety protocols.

**Table 5:** Consumers’ assessment on the food safety compliance (keep food at safe temperature)

<b>cold food is served cold.</b>	<b>WM</b>	<b>VI</b>	<b>QD</b>	<b>Rank</b>
Hot food is served hot.	3.26	AA	HC	1
Cold food is served cold.	3.22	A	C	2
Food is displayed at the right temperature and storage units like display chillers/bed of ice or hot holding cabinet.	3	A	C	4
Ensuring that the food is free from objectionable odor, color, or taste due to temperature abuse.	3	A	C	4
Foodlane vendors are using containers that can maintain the temperature of the food like glass or aluminum containers.	3	A	C	3
Total Weighted Mean	3.19	A	C	

**Legend**

Verbal Interpretation (VI): 3.25-4.00 = Strongly Agree (SA),

2.50-3.24 = Agree (A), 1.75-2.49= Disagree (D),

1.00-1.74= Strongly Disagree (SA)

Qualitative Description (QD): 3.25-4.00 = Highly Compliant (HC),

2.50-3.24 = Compliant (C), 1.75-2.49= Not Compliant (NC),

1.00-1.74= Not at All Compliant (NAC)

Table 5 shows the food safety compliance of food lane night market on 5 keys to safer food of the World Health Organization (WHO) in the concept “Keep Food at Safe Temperature”. The results showed that

keeping food at safe temperature is followed by vendors and observed by consumers, having a total weighted mean of 3.19 with verbal interpretation of agree and qualitative description of compliant.

As revealed by the study, the statement “Hot food is served hot” got the highest weighted mean of 3.26 with a verbal interpretation of strongly agree. This suggests that the Food lane Night Market ensures that hot food is served at the appropriate temperature. Consumers have evaluated that Food lane vendors maintain food at the correct temperatures. Additionally, maintaining proper temperatures, whether hot or cold, significantly reduces the risk of microbial contamination. Alimi (2016) highlights challenges in maintaining optimal temperatures for food supplies due to inadequate infrastructure, such as lack of refrigeration. The study underscores the importance of implementing comprehensive safety measures across the street food industry, encompassing good agricultural practices, hazard analysis critical control points (HACCP) strategies, and adherence to hygiene practices by both vendors and customers. These measures are crucial for mitigating risks associated with consuming street food.

On the other hand, the statement “Food is displayed at the right temperature and storage units like display chillers/bed of ice or hot holding cabinet” and “Ensuring that the food is free from objectionable odor, color, or taste due to temperature abuse” got the lowest weighted mean of 3.15 with verbal interpretation of agree. This shows that vendors are not very compliant in keeping food at the right temperature. This implies that the food lane vendors do not have storage to store the food to maintain its temperature and leads to food having unwanted color and taste due to temperature abuse. Letuka et al (2021) consumer assessment on street food vendors do not keep the food in an ice box or refrigerator. As mentioned by the World Health Organization (2006), keeping food at room temperature encourages microorganisms to grow very quickly. Because the growth of microorganisms is slowed or stopped, holding at a temperature below 5 degrees celsius and above 60 degrees celsius can eliminate any potential food poisoning bacteria from the food.

**Table 6:** consumers’ assessment on the food safety compliance (use safe water and raw materials)

Indicators	WM	VI	QD	Rank
Serving water and drinks which are clean and free from objectionable odor or color.	3.23	A	C	1
Serving that is free from objectionable odor, color, or taste due to unsafe raw materials.	3.20	A	C	2
Ensuring that the food served appears fresh and made of safe and raw materials and ingredients.	3	A	C	4
Foodlane water and beverages appear clean and safe.	3	A	C	2
Foodlane beverage containers are free from moss or dirt.	3	A	C	3
Total Weighted Mean	3.18	A	C	

**Legend**

Verbal Interpretation (VI): 3.25-4.00 = Strongly Agree (SA),

2.50-3.24 = Agree (A), 1.75-2.49= Disagree (D),

1.00-1.74= Strongly Disagree (SA)

Qualitative Description (QD): 3.25-4.00 = Highly Compliant (HC),

2.50-3.24 = Compliant (C), 1.75-2.49= Not Compliant (NC),

1.00-1.74= Not at All Compliant (NAC)

Table 6 shows the food safety compliance of foodlane night market on 5 keys to safer food of the World Health Organization (WHO) in the concept “Use of Safe Water and Raw Materials’ . Based on the result, it has a total weighted mean of 3.18 with a verbal interpretation of “agree” and a qualitative description of “compliant”. This means that vendors are using safe water and raw materials in preparing their foods.

As revealed by the study, the statement “Serving water and drinks which are clean and free from objectionable odor or color” got the highest weighted mean of 3.23 with verbal interpretation of agree. This indicates that vendors ensure that beverages are free from any unpleasant smell or discoloration. It suggests that the Foodlane Night Market serves water and drinks that are clean, devoid of objectionable odors or colors. Consumers have assessed the cleanliness of water and beverages served at the Foodlane Night Market, noting that the food offered does not exhibit objectionable odors or colors, thus indicating its safety for consumption. According to the World Health Organization (2006), harmful microorganisms and chemicals can be present in raw materials such as water and ice. Damaged or moldy foods may also produce toxic substances. Careful selection of raw materials and simple precautions like washing and peeling can reduce these risks significantly. Lihua et al. (2019) reported that while consumers and street food vendors generally had a good understanding of food safety, street vendors often fell short in practicing safe food handling. Only 26.7% had access to or utilized adequate hand-washing facilities, despite over 60% wearing clean clothes and masks.

On the other hand, the statement “Ensuring that the food served appears fresh and made of safe and raw materials and ingredients.” got the lowest weighted mean of 3.13 with verbal interpretation of agree. This indicates that vendors at the Foodlane Night Market use fresh and safe raw materials. It suggests that the Foodlane Night Market typically utilizes fresh ingredients and raw materials in preparing their food. Consumer assessments indicate that the use of fresh ingredients and raw materials is a less frequently observed practice. According to the Codex Alimentarius Commission (CAC), food safety ensures that food, when prepared and consumed as intended, does not harm consumers. Given that consumers prioritize food safety, regulations strictly oversee this aspect to ensure that purchased food meets safety standards. Food safety is paramount for both producers and consumers, necessitating careful consideration of the quality of raw materials used in the food production process.

**Csignificant Difference Between Consumers’ Sex And Type Of Consumers (Based On Occupation) On Their Assessment Of Food Safety Compliance Of Food lane Night Market In San Jose City, Nueva Ecija**

**Table 7:** Significant differences between the socio-demographic profile (sex) and their assessment of food safety compliance

Variables	T Stat	T-Critical	VI	Decision
Keep Clean	-0.77	1.65	Not Significant	Accept Null Hypothesis
Separate Raw and Cooked Food	-0.19	1.65	Not Significant	Accept Null Hypothesis
Cook Food Thoroughly	-1	1.65	Not Significant	Accept Null Hypothesis
Keep Food at Safe Temperature	0	1.65	Not Significant	Accept Null Hypothesis
Use Safe Water and Raw Materials	-1	1.65	Not Significant	Accept Null Hypothesis

Legend:

T-stat > T - Critical=Significant/Reject Null Hypothesis

T-stat< T – Critical=Not Significant/Accept Null Hypothesis

Table 7 indicates that there is no significant difference between sex and type of consumers (based on occupation) in their evaluation of food safety compliance at the Foodlane Night Market. The calculated data

showed that sex did not significantly influence perceptions regarding "Keep Clean," "Separate Raw and Cooked Food," "Cook Food Thoroughly," "Keep Food at Safe Temperature," and "Use Safe Water and Raw Materials." For instance, in the case of "Keep Clean," the results showed a T-statistic of -0.7713 against a T-critical value of 1.65, leading to a non-significant finding and acceptance of the null hypothesis. Similar non-significant results were observed for "Separate Raw and Cooked Food" (T-stat -0.19; T-critical 1.65), "Cook Food Thoroughly" (T-stat -0.52; T-critical 1.65), "Keep Food at Safe Temperature" (T-stat -0.40; T-critical 1.65), and "Use Safe Water and Raw Materials" (T-stat -0.89; T-critical 1.65). The acceptance of the null hypothesis indicates that the respondents' sex does not significantly affect their perceptions of food safety compliance. Therefore, the researchers concluded that there is no significant difference based on sex in how respondents evaluate food safety practices at the Food lane Night Market. Based on the results presented in table 10, both male and female consumers have a similar assessment in terms of keep clean, separate raw and cooked food, cook food thoroughly, keep food at safe temperature and use safe water and raw materials. This could mean that Food lane Night Market is compliant to food safety. This implies that the responses do not vary significantly across the respondents' sex. Regardless of the sex of the respondents, they assessed the sanitation practices similarly. This only signifies that general consumers' expectations and needs did not differ from males and females. The research by Sarmiento and Apritado (2022) confirms this as well. The respondents' assessment of the food safety procedures were consistent, regardless of their sex. This just suggests that patrons in general were not fond of food parks' methods regarding food safety. It is true that they have the right to protect themselves as well by actively monitoring and insisting that food be provided to them in a safe manner. The result is similar to the study of Han et al. (2018) which revealed that there is no significant difference between male and female respondents in their assessments about food safety. It was found that in this study gender is not an influential factor in the assessment of food safety. In contrast to the study of Azanaw et al. (2019) which shows that sex among participants was significantly associated with food safety practices.

**Table 8:** Significant differences between the socio-demographic profile (type of customer) and their assessment of food safety compliance

Variables	F Stat	F-Critical	VI	Decision
Keep Clean	0.71	2.64	Not Significant	Accept Null Hypothesis
Separate Raw and Cooked Food	0.61	2.64	Not Significant	Accept Null Hypothesis
Cook Food Thoroughly	2	2.64	Not Significant	Accept Null Hypothesis
Keep Food at Safe Temperature	0	2.64	Not Significant	Accept Null Hypothesis
Use Safe Water and Raw Materials	1	2.64	Not Significant	Accept Null Hypothesis

Legend:

F- stat > F- critical = Significant/ Reject Null Hypothesis

F- stat < F- critical = Not Significant/ Accept Null Hypothesis

Table 8 shows that there is no significant difference between sex and type of consumers (based on occupation) in their assessment of food safety compliance at the Food lane Night Market. The analysis indicated that type of consumers (based on occupation) did not significantly impact perceptions related to "Keep Clean," "Separate Raw and Cooked Food," "Cook Food Thoroughly," "Keep Food at Safe Temperature," and "Use Safe Water and Raw Materials." For instance, in the case of "Keep Clean," the analysis resulted in an F-statistic of 0.71 compared to an F-critical value of 2.64, leading to a non-significant finding and acceptance of the null hypothesis. Similarly, "Separate Raw and Cooked Food" yielded an F-statistic of 0.61 against an F-critical value of 2.64, indicating no significant difference and acceptance of the null hypothesis. The results were also non-significant for "Cook Food Thoroughly" (F-stat 1.78; F-critical 2.64), "Keep Food at Safe

Temperature" (F-stat 0.37; F-critical 2.64), and "Use Safe Water and Raw Materials" (F-stat 0.69; F-critical 2.64). Accepting the null hypothesis implies that the type of consumers (based on occupation) did not significantly influence their perceptions of food safety compliance. Therefore, the researcher concluded that there is no significant difference based on the type of consumers' occupation in how they assess food safety practices at the Food lane Night Market.

Based on the findings presented in table 8, employed individuals, self-employed/entrepreneurs, students, and retirees showed similar assessments regarding "keep clean," "separate raw and cooked food," "cook food thoroughly," "keep food at safe temperature," and "use safe water and raw materials." This suggests that the Food lane Night Market adheres to food safety standards uniformly across different types of consumers (based on occupation). These results indicate that there is no significant variation in responses across different types of consumers (based on occupation). Regardless of their occupational status, respondents evaluated sanitation practices similarly, implying consistent expectations and requirements among consumers. Under the Food Safety Act (RA 10611), Section 32 mandates that all consumers receive food safety education. These findings suggest that public knowledge and education regarding food safety are consistent. Retirees, employed individuals, self-employed/entrepreneurs, and students all shared similar perspectives on the food safety practices observed at food parks.

**Significant relationship between consumers’ age and number of visits on their assessment of food safety compliance of Foodlane Night Market in San Jose City, Nueva Ecija**

**Table 9:** Significant relationship between the socio-demographic profile (age) and their assessment of food safety compliance

Variables	P-Value	Verbal Interpretation	Decision
Keep Clean	0.76	Not Significant	Accept Null Hypothesis
Separate Raw and Cooked Food	0.72	Not Significant	Accept Null Hypothesis
Cook Food Thoroughly	0.84	Not Significant	Accept Null Hypothesis
Keep Food at Safe Temperature	0.22	Not Significant	Accept Null Hypothesis
Use Safe Water and Raw Materials	0.33	Significant	Reject Null Hypothesis

Legend: P- value < 0.05 = Significant/ Reject Null Hypothesis

P- value > 0.05 = Not Significant/ Accept Null Hypothesis

Table 9 illustrates the relationship between consumers' age and their evaluation of food safety at the Food lane Night Market. The variables "Keep Clean," "Separate Raw and Cooked Food," "Cook Food Thoroughly," "Keep Food at Safe Temperature," and "Use Safe Water and Raw Materials" indicate that there was no significant correlation between age and consumers' assessments of food safety. Additionally, the variables show a minimal positive association between age and their assessment of food safety. Therefore, the researchers accepted the null hypothesis, concluding that age did not significantly influence consumers'

evaluations of food safety. The findings of Sanlier et al. (2018) similarly indicated no significant relationship between demographic factors such as age and food safety scores.

**Table 10:** Significant relationship between the socio-demographic profile (number of visit) and their assessment of food safety compliance

Variables	P-Value	Verbal Interpretation	Decision
Keep Clean	0.21	Not Significant	Accept Null Hypothesis
Separate Raw and Cooked Food	0.09	Not Significant	Accept Null Hypothesis
Cook Food Thoroughly	0	Significant	Reject Null Hypothesis
Keep Food at Safe Temperature	0	Significant	Reject Null Hypothesis
Use Safe Water and Raw Materials	0	Not Significant	Accept Null Hypothesis

Legend: P- value < 0.05 = Significant/ Reject Null Hypothesis

P- value > 0.05 = Not Significant/ Accept Null Hypothesis

Table 10 presents the relationship between consumers' number of visits and their evaluation of food safety at the Food lane Night Market. The variables "Keep Clean," "Separate Raw and Cooked Food," indicate that there were no significant relationship while "Cooked Food Thoroughly", "Keep Food at Safe Temperature," and "Use Safe Water and Raw Materials" indicate that there was significant relationship between the number of visits and consumers' assessments of food safety.

**Table 11:** Proposed action plan to improve food safety compliance

Key Result Areas (KRA)	Strategies/ Programs/ Implementation	Desired Outcome
Keep Clean	<ul style="list-style-type: none"> <li>- Distribute PPE (hairnets, plastic gloves, etc.) to food handlers.</li> <li>- Mandate the use of PPE during food preparation and service.</li> <li>- Monitor compliance with PPE use.</li> </ul>	Establish a consistent practice where all food handlers wear appropriate personal hygiene equipment to uphold hygiene standards and minimize contamination risk.
Separate Raw and Cooked Food	<ul style="list-style-type: none"> <li>- Mandate separate containers for raw and cooked food.</li> <li>- Require separate areas for raw food preparation and cooked food handling.</li> <li>- Ensure food preparation areas are distant from dining areas.</li> </ul>	Vendors utilize designated separate areas for food preparation and dining to minimize cross-contamination risks and maintain hygiene and food safety standards.
Cook Food Thoroughly	<ul style="list-style-type: none"> <li>- Mandate cooking food only after purchase.</li> <li>- Prohibit the sale of food that appears reheated.</li> <li>- Monitor vendors to ensure dishes are prepared from scratch.</li> </ul>	Ensure all food served appears fresh and not reheated, upholding perceptions of freshness and quality among consumers.
Keep Food at Safe Temperature	<ul style="list-style-type: none"> <li>- Mandate the use of appropriate storage facilities (e.g., display chillers, ice beds, hot holding cabinets).</li> <li>- Conduct inspections for proper storage facilities.</li> </ul>	Food is consistently displayed at the correct temperature, utilizing suitable storage units to maintain safety and quality standards.

	- Enforce regulations on temperature maintenance.	
Use Safe Water and Raw Materials	- Prohibit the use of tap water for washing raw materials and preparing drinks. - Mandate FDA-approved raw materials. - Install and maintain proper water supply infrastructure.	Ensure food maintains a fresh appearance and is prepared using safe raw materials and ingredients throughout preparation and service.

## CONCLUSION

After thoroughly analyzing the survey data, the researchers found that the majority of respondents were female (164 or 60.1%), who enjoyed the variety and affordability of street food at the Foodlane Night Market, with those aged 20 and below (113 or 41.4%) and students (56.04%) being the most frequent consumers, often visiting more than five times (52.01%) due to budget-friendly prices; respondents were generally satisfied with the food safety compliance, particularly in separating raw and cooked food (3.24); no significant differences were observed in food safety compliance based on sex and occupation, implying consistent expectations across these demographics; and while there was no significant relationship between age or number of visits and most food safety parameters, a significant relationship was found between the number of visits and the parameters cook food thoroughly, keep food at safe temperature and use safe water and raw materials. An action plan has been proposed to address identified areas for improvement based on the lowest-rated survey responses, aiming to further enhance the Food lane night market's food safety practices.

## RECOMMENDATION

Consumers should inspect food for compliance with safety regulations, food lane vendors should take responsibility and attend food safety seminars, future researchers can use this study as a resource, the researchers should share findings with the City Health Office and Public Market Office to inform an action plan, PHINMA Araullo University can use this study as an educational resource, and the City Health Office can consider conducting a seminar on food safety compliance for food lane night market vendors in San Jose City, Nueva Ecija.

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